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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/748,434	12/30/2003	Tomohisa Honda	CU-3529 RJS	8115
26530	7590	12/07/2005	EXAMINER	
LADAS & PARRY LLP 224 SOUTH MICHIGAN AVENUE SUITE 1600 CHICAGO, IL 60604			SCHECHTER, ANDREW M	
			ART UNIT	PAPER NUMBER
			2871	

DATE MAILED: 12/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/748,434

Applicant(s)

HONDA ET AL.

Examiner

Andrew Schechter

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 September 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2, 5, 7 and 8 is/are allowed.
- 6) ☒ Claim(s) 1 and 4 is/are rejected.
- 7) ☒ Claim(s) 3 and 6 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 September 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 26 September 2005 have been fully considered but they are not persuasive.

The applicant has amended claim 1 to recite "and no colored layer is formed between the black matrix in the pixel part" and argues that the applied references have color filter layers in this position [pp. 9-10]. This is not persuasive. The claim already recited that the substrate was "monochrome", and the combination of applied references teaches making a monochrome device without the presence of the colored filter layer [see the teaching of *Okamoto*]. The previous rejections are therefore still appropriate.

The applicant argues [p. 9] that Fig. 1 of *Hiroshima* does not disclose "that columnar spacer is formed in an area where the black matrix is formed" [sic]. This is not persuasive. The reference does disclose that a columnar spacer is formed in an area with the black matrix, as recited in the claim and clearly shown in the figure. There is no limitation that every spacer (or every part of the spacer) must be located in such an area, or that spacers cannot also be formed outside such an area. The examiner notes that such limitations would not necessarily make the claim patentable, as there are ample teachings in the art to form a black matrix covering the entire periphery of the LCD and all the spacers.

The applicant argues [p. 9] that Fig. 2 of *Hiroshima* shows spacers which do not meet the recited claims. This is not persuasive. The rejection clearly referred to *Hiroshima*'s Fig. 1 which does show recited claim features, and it is irrelevant what other figures disclose.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Hiroshima et al.*, US 2003/0025868 in view of *Morimoto*, U.S. Patent No. 5,659,379 and further in view of *Okamoto et al.*, U.S. Patent No. 6,281,952.

Hiroshima discloses [see Fig. 1, for instance] a substrate for a liquid crystal display apparatus comprising a substrate [SUB2], a black matrix [BM] formed in a pattern on the substrate, a protection layer [OC2] formed on the substrate so as to cover the black matrix, and a columnar spacer [SP1, SP2] formed in the area with the black matrix and formed on the protection layer, for adjusting the gap between the substrate and the counter substrate [SUB1], wherein the height from the surface of the substrate to the upper surface of the columnar spacer [SP1] provided in the pixel part of the substrate is higher than the height from the substrate surface to the upper surface of

the columnar spacer [SP2] provided in the outer peripheral part as the pixel part peripheral area of the substrate.

Hiroshima discloses that the height difference is given by the thickness of the counter electrode [ITO2], but does not disclose what this thickness is. *Morimoto* discloses an analogous counter electrode for an analogous device, and teaches that its thickness is “preferably controlled within the range of 1300-1700 [Angstroms] in consideration of the resistance of the counter electrode ... itself and for prevention of moiré” [col. 7, lines 54-57]. It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to make the height difference within the recited range of 0 μm to 0.8 μm , motivated by *Morimoto*’s teaching for what the thickness of the counter electrode should be.

Hiroshima does not disclose that the LCD is monochrome; instead, it discloses color filters [FIL]. However, [unlike US 2003/0112405 to *Kim et al.*, discussed below] the color filters are not related to the spacer structures, so they are not essential to *Hiroshima*’s invention. *Okamoto* discloses [col. 87, lines 27-36] that LCDs can be made without color filters, and thereby obtain a higher resolution monochrome display. It would have been obvious to one of ordinary skill in the art at the time of the invention to form the monochrome version of *Hiroshima*’s device, motivated by the desire to obtain a higher resolution display. Such a device would have no colored layer formed between the black matrix in the pixel part, as amended. Claim 1 is therefore unpatentable.

4. Claims 1 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Kim et al.*, U.S. Patent No. 6,819,391 in view of *Okamoto et al.*, U.S. Patent No. 6,281,952.

Kim discloses [see Fig. 4B, for instance] a substrate for a liquid crystal display apparatus comprising a substrate [200], a black matrix [210] formed in a pattern on the substrate, a protection layer [240] formed on the substrate so as to cover the black matrix, and a columnar spacer [250, 260] formed in the area with the black matrix and formed on the protection layer, for adjusting the gap between the substrate and the counter substrate [100], wherein the height from the surface of the substrate to the upper surface of the columnar spacer [250] provided in the pixel part of the substrate is higher than the height from the substrate surface to the upper surface of the columnar spacer [260] provided in the outer peripheral part as the pixel part peripheral area of the substrate by in a range of 0 μm to 0.8 μm [in this case 0 μm , since they are explicitly the same height].

Kim does not disclose that the LCD is monochrome; instead, it discloses color filters [220]. However, [unlike US 2003/0112405 to *Kim et al.*, discussed below] the color filters are not related to the spacer structures, so they are not essential to *Kim's* invention. *Okamoto* discloses [col. 87, lines 27-36] that LCDs can be made without color filters, and thereby obtain a higher resolution monochrome display. It would have been obvious to one of ordinary skill in the art at the time of the invention to form the monochrome version of *Kim's* device, motivated by the desire to obtain a higher

resolution display. Such a device would have no colored layer formed between the black matrix in the pixel part, as amended. Claim 1 is therefore unpatentable.

Kim's device is an IPS LCD [col. 5, lines 35-36], so claim 4 is also unpatentable.

Allowable Subject Matter

5. Claims 3 and 6 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. Claims 2, 5, 7, and 8 are allowed.

7. The following is a statement of reasons for the indication of allowable subject matter:

The prior art does not disclose the device of claim 2, in particular the limitations that a monochrome LCD has a columnar pixel spacer with a higher height than a columnar outer peripheral spacer. The prior art discloses pixel spacers of the same intrinsic height as the outer peripheral spacers, but mounted at a higher level, thereby obtaining a higher height (altitude) from the substrate. Claim 2 is therefore allowed, as is its dependent claim 5.

Similarly, the prior art does not disclose claim 3, containing these limitations, so claim 3 and its dependent claim 6 would be allowable if rewritten appropriately.

The prior art does not disclose the method of claim 7, in particular the limitations that a monochrome LCD is made with the steps of forming a columnar spacer in the

outer peripheral part of the display first, and then forming a columnar spacer in the pixel part of the display. Claim 7 is therefore allowed, as is its dependent claim 8.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 2003/0112405 to *Kim et al.* discloses an LCD in which the height from the surface of the substrate to the upper surface of the columnar spacer is higher in the pixel part of the display than in the outer peripheral part of the display, as recited in claim 1. However, the display is not a monochrome display, and the difference in height relies on the presence of color filter layers, so it would not be obvious to one of ordinary skill in the art at the time of the invention to apply this feature in a monochrome display or make a monochrome version of this display. (The term "monochrome" in the preamble of each independent claim has a clear structural implication for the claims: a monochrome display does not have any color filter layers, so devices with such color filter layers are outside the scope of the claims.)

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

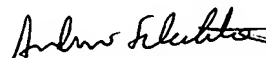
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Schechter whose telephone number is (571) 272-2302. The examiner can normally be reached on Monday - Friday, 9:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached on (571) 272-2293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Andrew Schechter
Primary Examiner
Technology Center 2800
3 December 2005